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THE BIRDS OF THAT PORTION OF THE NORTH-EAST COAST BETWEEN TYNEMOUTH AND SEATON SLUICE, NORTHUMBERLAND.

By J. M. Charlton.

The following history of the birds of this small piece of the Northumberland coast-line is of much interest, not only on account of the great number of rare species which have been shot or seen from time to time, but also because of the fact that this was one of the most favourite haunts of John Hancock, the distinguished northern ornithologist. Whenever he had the chance, Hancock used to run down from Newcastle for a few days, or an afternoon's shore-shooting along the coast between Tynemouth and St. Mary's Island. Most of these excursions took place between the years 1830 and 1876, from what I can judge by the records. He was usually accompanied by either the late Mr. C. M. Adamson or Mr. W. Hewitson, and on several occasions by Messrs. Philip Stanton, William Kell, and Thomas Harvey, who were all keen ornithologists. That these expeditions were not fruitless is shown by the large number of extracts from his 'Catalogue of the Birds of Northumberland and Durham,' which I have collected in this paper.

Many of the records for this district have been of the greatest interest and value to ornithology. First, as regards Britain: the first example of the Yellow-browed Warbler shot in the country was obtained at Hartley by John Hancock, and the only example of the white-headed form of the Long-tailed Tit (*Acredula caudata*) obtained in England was the one found dead at Tynemouth in 1852. Secondly, with reference to Northumberland, the species which have occurred within this locality and stand alone for the county are the Yellow-browed Warbler, Rustic Bunting, Pectoral Sandpiper, Avocet, and Levantine Shearwater. One of the two Golden Orioles obtained in Northumberland was shot at Tynemouth; the fourth and last example of the Wood-Lark was procured in this district; one of the few Hoopoes was shot at Cullercoats; John Hancock mentions that the only occurrence, to his knowledge, of the Grey Plover in summer plumage was procured here; the second example of the Spotted Redshank was got here in 1831; the occurrence of the Iceland Gull is one of the few for the county. The natural hybrid between the Reed and Yellow Buntings is an unique occurrence, and the record of the Chiffchaff in winter is also of great interest, and is the only one for the county. This latter would not be of so much interest were it not for the fact that the district is so little suited to the habitation of such a frail bird in winter, when insect-life is almost entirely absent. This species frequently passes the winter in the more sheltered southern counties of England, but its occurrence so far north is extraordinary. The first record of the White Wagtail for the county was shot here.

As I have before stated, the district is very unsheltered, and affords but little seclusion to any birds which may visit it, especially of the land species. This accounts for the fact that most of the birds mentioned in the following pages have only been passing on migration, and were not making any stay in the neighbourhood. The only places which offer shelter to birds of retiring habits belonging to the Passerine species are Whitley, Briar, and Holywell denes, situated a short distance from each other, and the last two in direct communication with the sea. The rest of the country is almost devoid of trees, but here and there a few isolated clumps stand bare and rigid, facing the cutting blasts of the north-east wind. The only sheets of fresh water are at Whitley Dene and Tynemouth Park, the former, once used as a reservoir to supply the district, being

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the larger. The hollow in which the water stands was formerly quarried out, and one side is almost perpendicular, which shelters the water from the wind. On the other side short, stumpy trees—elders (which tree grows better than any in this district)—grow down to the water's edge, which is shallow. This would be a very good place for wildfowl in winter, but unfortunately there are several houses on both sides, and few birds are bold enough to venture near, except perhaps an occasional Snipe or Wild Duck.

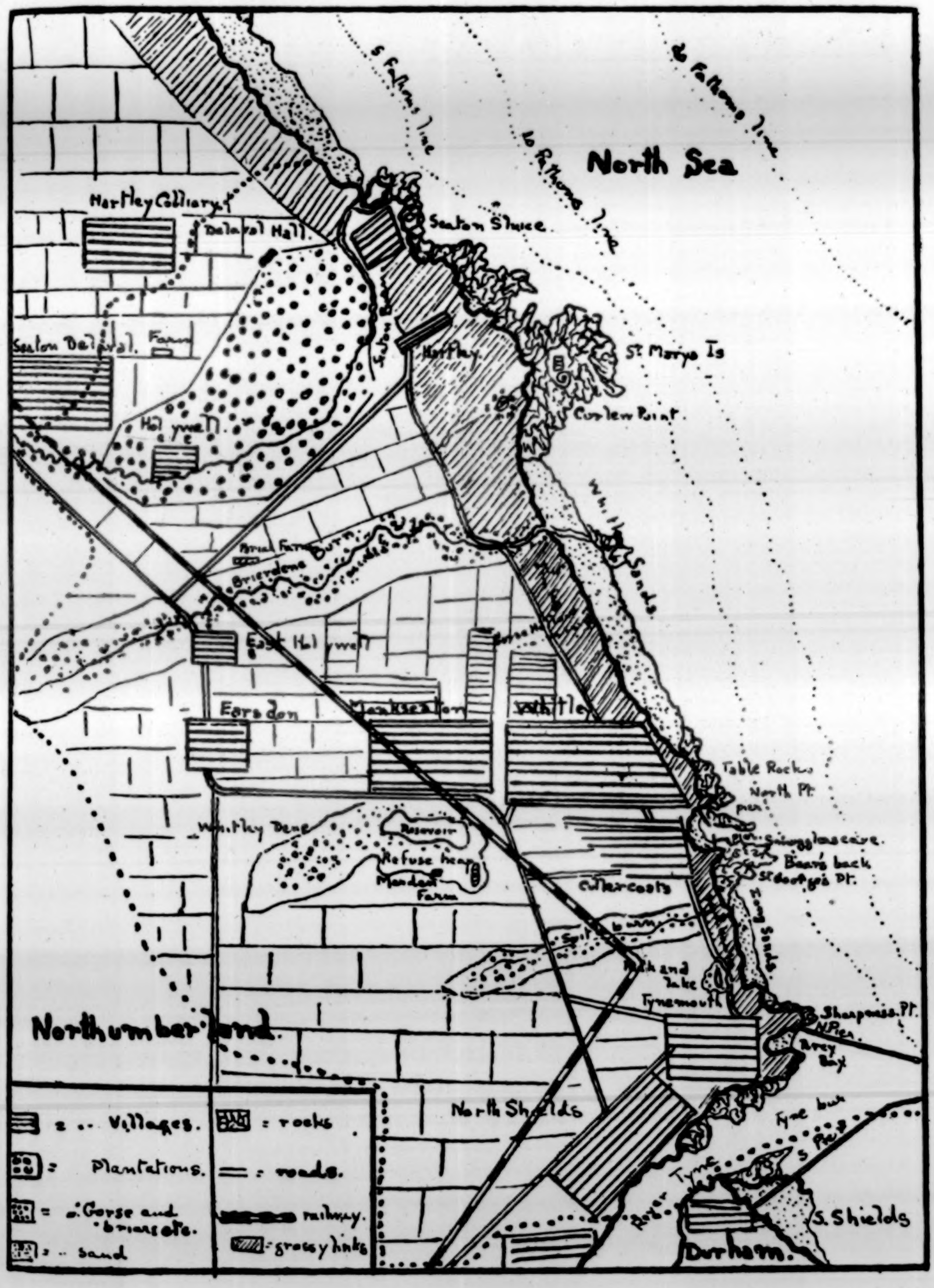
With the exception of the three valleys before mentioned the ground is flat and uninteresting, and where it is not built over is under cultivation for the greater part. But in this district, as in all others, the increasing population demands an extension of the villages, and the number of houses has increased of late tremendously. This accounts for the steady decrease in the number of bird visitors from year to year. At the present day, birds which were fairly common in John Hancock's time as breeding species are now never seen, such as the Tree-Sparrow and Quail; and it is very seldom that the large numbers of wildfowl spoken of in former days are observed. Soon, it is to be feared, a future generation will smile incredulously when we talk of the birds to be seen now. The bird-life there is a thing of the past, as is the case in many of the former haunts of the feathered world; therefore, this paper is not so much a history or description of the birds to be found there at present, but a record of former days. Still, something can yet be done to retain an occasional visitor to the coast, and this would be to stop the shooting of birds—at any rate, on Sundays—and more especially at St. Mary's Island, whither numbers of men resort, usually on the day of "rest," to slaughter anything, from a Pipit to a Cormorant, which they come across. Another fact which prevents the stay of any shore-bird in the vicinity is that the coast has no flats or slakes on which wading species usually feed. The nearest thing of the kind was formerly Jarrow Slake, but this does not come within the radius of the paper, being some miles up the Tyne, and is now, of course, owing to increased shipping, "no more." Many of the birds formerly shot on this coast would be passing to or from these flats.

That bird-life was plentiful in former years along the coast is well shown by an extract from Mr. C. M. Adamson's book, 'Some more Scraps about Birds':—"On the 12th Sept. 1843, I walked from Tynemouth soon after five o'clock a.m. to Hartley Island. There had been a quantity of rain, and it was very misty. On Whitley Sands a young Greenshank ran out from among some seaweed which had been walled up by the tide, and was endeavouring to fly away when I shot it. I saw some Dunlins on some wet mud, and shot into a flock of them, killing two; another bird fell wounded, which I followed, and was pleased to find a Little Stint. I afterwards saw six birds, which I thought were Dunlins, feeding in a pool of rain-water high up on the sands, which part is only covered at spring-tides. I killed three of them, and was again pleased to find them Little Stints; the others settled again amongst Dunlins, when the difference in size was easily to be seen."

Mr. Duncan has also kindly supplied me with a list of the different species he shot in a single day (Aug. 16th, 1866) at St. Mary's Island:—Sheld-Duck, Teal, Curlew, Whimbrel, Oystercatcher, Ringed Dotterel, Redshank, Knot, Common Tern, Sandwich Tern, Great Black-backed Gull—thirty specimens in all. This is a very large "bag" for such a place as this, and it goes to prove that birds were not uncommon here in former years. Mr. Duncan shot with a single-barrelled muzzle-loader on this occasion, from daylight until nearly dark.

Yet even in recent years, during very severe weather, numbers of birds have been seen in a single day. As an example, I will take a spell of very stormy weather which was experienced between Oct. 24th and 28th, 1909. On the 26th my brother observed the following birds:—Ten Golden-eyes, a Great Northern Diver, five Common Skuas, all the commoner Gulls, a Gannet, flocks of Dunlins, Purple Sandpipers and Ringed Plover, several Redshanks, Snow-Buntings, and a Brent Goose.

I will now proceed to trace the coast-line. A few hundred yards from the mouth of the Tyne the land suddenly takes a sweep inland, forming what is called Percy Bay, at the extremity of which are what are known as the "short sands." On the cliffs above this was formerly situated Willy Dean's cottage, in which Thomas Bewick lodged in 1801. The promontory to the north of this bay is known as Sharpness Point. The coast at



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Map of S.E. North'd. coast

Scale. 1 inch = 1 mile.

Tynemouth is very high and rocky, but about half a mile from the mouth of the Tyne the cliffs become lower, and composed of soil and clay and covered by grass, gradually sloping to the shore, a long stretch of sand being exposed at low tide. These conditions prevail for about half a mile, until Cullercoats is reached, where the banks become steeper and rocky. The land here goes out into a point, known as George's Point, which has formerly extended for a quarter of a mile out to sea, as the rocks at the extremity testify, and part of which are known as the "Bear's Back," owing to their form. This point is, unlike any other part of this coast, composed of an outcrop of yellow sandstone. The coast-line then turns inwards, forming a small bay, at the extremity of which is situated the village of Cullercoats.

During a high tide in stormy weather the water in this bay is comparatively smooth, and consequently birds hard pressed by the wind and waves seek refuge in it. On account of this, and also because numbers of small fish frequent the waters here, there is generally a bird visitor to be seen swimming about and diving in all conditions of weather, even at the present time.

The shore then extends outwards, forming another point, which is bold and rocky; then gradually the rocks extend inland, forming what are known as the "Table Rocks." Now the cliffs, which have attained the height of about forty feet, disappear at the town of Whitley, and low grassy links and sand-banks take their place, with a stretch of sand about three hundred yards wide before them. In former days this was a favourite resting-place for the smaller migrants, among the clumps of gorse, but now that promenades have been built along the coast the birds prefer to move on without resting. About half a mile along a small stream empties itself into the sea; this is known as the "Briar Burn." If we follow it up for a short distance, as many a tiny bird migrant has done before, we will find that it runs through a small valley studded with clumps of gorse, thorns, and briars, from which latter it takes its name. In spring it presents a very pretty sight, and one which seems quite foreign to the adjacent surroundings of bricks and mortar which have sprung up in the last year or two.

About five years ago I used to come here daily during the spring migration, and note the new arrivals as I came upon them either skulking in the gorse-bushes, or uttering their feeble notes from the topmost sprays of the thorns. To me there is nothing in the observation of bird-life to compare with the pleasure and anticipation of looking out for and recognizing each new species as it arrives. In those times the dene had a notice at the bottom and top of it: "Trespassers will be prosecuted, and stray dogs shot"; and on each side: "The game and shooting rights over this land are strictly preserved. By order." What irony the latter is! I think in all my visits I have seen but two Partridges and an occasional Snipe on the land! But as far as the wild birds were concerned, this state of affairs was ideal. Whether the notices frightened them, or they did not wish to go, I do not know, but despite the fact that a public footpath ran across it at one point, I never saw anybody wandering off the beaten track.

The sand-banks prevail for about a mile and a quarter, the coast gradually turning seawards, and forming a point, at the extremity of which is a small island, by name Bates', or St. Mary's. This is not an island, strictly speaking, as the water only surrounds it at high tide. This spot is mentioned more perhaps than any other in the following paper, which is due to the fact that many of the birds passing along the coast touch at this place, and are thereby procured. There is a space of about a hundred yards between the island and the mainland, and birds passing fly through this gap. Here butts are formed at low tide, in which the gunners sit, now generally in vain. As this is one of the most commanding points on that part of the coast, it is in the direct line of flight of birds passing north or south. During later years a large lighthouse has been erected on the island, but very few migrants have been observed at it, owing, doubtless, to the fact that the duration of the flashes of light is too short, and that during the periods of darkness the birds probably pass on. St. Mary's Island may well claim to have a very remarkable record of rare birds procured or observed on or near it. For over a hundred years it has been the more or less constant haunt of one or more men with guns. To this fact the island owes its great number of records, for there has always been someone on the spot, and within a short distance of one of the most competent ornithologists who have ever lived, namely, John Hancock. If ever any bird appeared which was "out of the ordinary," it was sent straight to him or Mr. Adamson, and although they probably often received common species to identify, yet a rare bird was sure to have careful and accurate attention. Ever since the building of a house by John Ewen, some forty years ago, on the island, the shooting was on the wane. More men came to shoot, and birds learnt to shun the locality. On the erection of the lighthouse about 1896 it was for the greater part entirely spoilt. The birds avoided the "gap," being frightened by the unnatural-looking object close by, and preferred to pass on the seaward side. A year or so ago the island was connected to the mainland by telephone, and the wire across the passage is a still further cause of fear to the birds. They see the wire before them, and rise up to avoid it, thereby passing out of range of the shooters. Birds have several times struck against this, and a Tern on one occasion flew straight into it and fell dead; Oystercatchers and Gulls have also been seen to stun themselves against it. Yet even now the commoner shore-birds are seen, and so they will be as long as birds migrate; for they must pass up and down the coast, and some must go by St. Mary's Island. But will they stop to rest as in former days, or pass close to the shore? I would hardly think so!

There is one thing which will testify to the frequency of the visits of shooters more than anything. This is that the shot used to be washed up by the tide in handfuls, and some even assert that John Ewen collected it and sold it on the island, which is entirely incorrect, although many of the shooters made use of it again for their muzzle-loaders. Even in later years my brother has frequently seen small quantities lying at high-tide mark, or in the crevices in rocks.

Opposite the island a small stream runs out, and some yards from its mouth it has opened out and formed a sort of tiny marsh. Occasionally Snipe and even an old duck used to resort here to feed as dusk came on, and a sudden approach over one of the sandhills close by often resulted in a shot.

Proceeding from Bates' Island the coast-line becomes high and rocky, and two small bays are carved out in it, with a stretch of sand at their extremities. Thus three bold points are formed, which jut out some distance into the sea, and each has its stretch of seaweed-covered rocks before and on both sides of it. On the cliffs at the north-west corner of the most northern of these two bays is the village of Seaton Sluice. Here an artificial passage has been cut to afford ingress to boats up the Holywell Burn, when the village was a flourishing port many years ago. The natural mouth of the stream runs into the sea a little further along the coast. These two passages form an island, on which were built one or two houses of the village. The water at the mouth of this burn is the haunt of any ducks which may be about, as they feed on the substance brought down by the stream.

Holywell Dene is the largest valley in the district, and extends for about two miles inland, being about four hundred yards wide at the broadest part. The stream, which in former years was pure water, is now stained a filthy brown by the mine workings at the top. If we follow it up from Seaton Sluice, after leaving the village, we find the banks very low, and the field by its side full of small pools of thick black water. To this Snipe and other waders have been known to resort, and by the spongy nature of the ground there ought to be a sufficiency of food for them. About a quarter of a mile above the town the valley becomes wooded, and continues so to the source of the stream. The trees are chiefly beech, some of them very fine specimens, and during summer they afford ample shelter to such small birds as may venture there. Unfortunately at that time of year this valley is the constant haunt of "trippers," chiefly on Saturdays and Sundays, who climb trees, harry the nests, trap and snare the old birds when possible, and make things generally disagreeable for them. Once things were different, and one could wander through the woods in the height of summer, meeting with no life but that which flew or crawled.

On the right of the dene, standing among some more beeches, is Delaval Hall, the former seat of the family of that name. If there is ever any large bird, such as a Buzzard or Eagle, in the neighbourhood, it seeks the seclusion of these woods, only to be ruthlessly hunted out and shot! Near the top of the dene lies the pit-village of Holywell; through this runs the high road, which I have taken as my western boundary. This passes through Earsdon, Monkseaton, and thence behind Whitley and Cullercoats to Tynemouth.

To sum up the geographical details, I must mention a rather important feeding-ground of the avifauna of the district. This is a large refuse-heap in the fields of Fenwick Wilson, Esq., of Marden, a half mile or so behind Cullercoats. To it large numbers of birds used to, and sometimes now, resort, especially in winter when natural food is scarce. Starlings and Gulls are usually the commonest, while in spring and autumn large numbers of small migrants, such as Whinchats, Wheatears, and Pipits, frequent it and feed on the myriads of insects which are to be found in abundance on the decaying offal.

This is the area, the ornithology of which I write, and, considering its small extent and mostly unfavourable nature, the number and interest of its bird-visitors are, at any rate, remarkable.

It will be noticed that, wherever it is possible, I have given the earliest record I can find for the species, but, of course, as regards the very common birds this is unnecessary.

It will also be observed that the records of the smaller Passerine species, especially the Warblers, are not numerous. In all probability they have occurred on migration, but as this usually takes place at night they have passed on, and were out of the district by daybreak, especially as such little shelter is afforded to them.

For the past twelve years I have kept a close and careful log-book of the various occurrences in the district, especially with regard to the arrival and departure of the migrants, and wherever possible I have given the average date of arrival and departure of the migratory species.

I have culled some of my information from J. Hancock's 'Catalogue of the Birds of Northumberland and Durham,' and besides that from the following: Selby's 'Catalogue of Birds' of the same two counties; 'Catalogue of the Collection of Birds at the Hancock Museum, Newcastle-on-Tyne'; 'A History of Tynemouth, Cullercoats, and Whitley Bay, Northumberland,' by W.

Tomlinson, Esq. (and I must thank the author for the kindness he showed me in endeavouring to find out some information with regard to the birds of the district). Two of my most fruitful sources of information were C. M. Adamson's books, 'Scraps about Birds' and 'More Scraps.' The author of these last books was one of the most competent and careful ornithologists of the North of England, and his special study was the changes of the plumages of birds, chiefly of the wading species.

Besides the foregoing, many valuable notes have been obtained from private sources, and I must especially thank the following gentlemen for their kindness in providing me with information:—Mr. Robert Duncan (taxidermist), Newcastle-on-Tyne, who was a continual visitor to St. Mary's Island in former years, and has procured many very valuable birds there, as will be seen from my paper; Herbert Coxon, Esq., Newcastle-on-Tyne, for allowing me to examine his collection of stuffed birds, in which are several examples of much importance; Mr. J. Ewen, Whitley Bay, for kindly allowing me to examine his stuffed specimens of Sand-Grouse, Peregrine Falcon, &c., which he obtained on St. Mary's Island when he was in residence there; Mr. W. J. Monk, who was light-keeper on the island shortly after the lighthouse was installed, and remained there some nine years, for several notes on birds which he observed during his stay; Mr. G. Wright (taxidermist), Whitley Bay, for supplying me with information regarding several rare specimens which have passed through his hands; Mr. H. B. Hodgson, Whitley Bay, for several interesting facts relative to the breeding of certain species within the district; Mr. William Richardson (taxidermist), Seaton Delaval, for much information regarding occurrences at Holywell and Delaval; Mr. J. Taylor, formerly taxidermist, Cullercoats, for notes concerning the occurrence of the Bittern, &c.

(To be continued.

THE PHARYNGEAL TEETH OF FISHES.

By Colonel C. E. Shepherd (Indian Army).

(Continued from vol. xiv. p. 425.)

In the *Gadidæ* we have a family that is well furnished with pharyngeal teeth, and may begin with one of the commonest of this family.

Gadus morrhua. The Cod.

The first branchial arch has on the outside edge eighteen horny gill-rakers on the cerato- and hypo-branchials, with nine on the epibranchial; the longest ones, the seventh and eighth of the first series, are about one-half of the depth of the gills just below them. As they progress towards the front of the mouth they gradually dwindle in size till they become rudimentary. The inner side of the first arch and both sides of the second and third arches, and the outer side of the fourth arch, carry teeth bearing tubercles so placed as to fit alternately into each other when the gill-slit is closed. The upper pharyngeal teeth consist of one patch of elongated shape, attached to the end of the second epibranchial, and a roughly quadrilateral shaped plate, but really consisting of two pieces, on the ends of the third and fourth epibranchials on each side. The teeth on these are cardiform, those nearest the œsophagal opening being much stronger than the others. The teeth of the lower pharyngeals are more finely cardiform, but with stronger cardiform teeth on the inner margins, where the two plates of the lower pharyngeals meet in a broad V, although they do not touch each other in the median line. It would not be out of place here to consider the class of food that the pharyngeal teeth of the Cod has to deal with. In the southern part of the North Sea they feed mostly on crustaceans. These were found in 83 per cent. of stomachs examined, and consist of Crabs, including the Hermit-Crab, and Shrimps and Prawn-like animals. Fish were found in 35 per cent., the greater Sand Launce and the young of the Herring, the Sand Dab, and the Whiting, and other fish as well are brought into requisition. Polychæte worms were found in 16 per cent., principally the Sea-Mouse (*Aphrodite aculeata*). Mollusca, chiefly Whelks.*

GADUS MERLANGUS. The Whiting.

The horny gill-rakers of the first branchial arch in this fish begin at the angle; there are none on the epibranchial, they number nineteen on the cerato- and hypo-branchial. The largest ones are nearly the same length as the depth of the gill below them; the gill-rakers are toothed on their inner face. The gill-rakers on the other arches are tuberculous, and they carry teeth. They fit into each other alternately, and form a close filter. The upper pharyngeal teeth appear as two circular patches of cardiform teeth, consisting actually of three pieces, but the joint of the lower piece hardly shows; those on each side nearer the middle line are more pronounced than the others. The lower pharyngeal teeth, also cardiform, are in a broad V-shaped patch, separated down the middle by a line of mucous membrane, and here, again, the teeth along the sides nearest the middle line are bigger than the others; there are two rows of such larger teeth on each side. The food of the Whiting consists of crustaceans, other fish, annelids, and starfishes.

GADUS ÆGLIFINUS. The Haddock.

This fish has on the epibranchial two, and on the cerato-hypobranchial of the first branchial arch twenty-three horny gill-rakers, but they are not toothed. The remainder of the gill-rakers are elongated tubercles with minute teeth on them; they fit more nearly opposite to each other than alternately, thus leaving a large opening for water to pass through to the gills. The upper pharyngeal teeth are cardiform, with the more prominent ones along the tops of the three patches that contain them. The lower pharyngeal teeth are in two patches, forming a narrower V than in the last fish mentioned. The lower apex of the V is separated by a line of mucous membrane, and the larger cardiform teeth on the inner edges of the apex are arranged in clumps at the apex rather than in two rows as in the Whiting.

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* The above percentage of food found in the stomachs of Cods is taken from the information posted up in the "Fisheries Investigations" Cabinet in the Central Hall of the British Museum of Natural History, where specimens of some of the food animals are also shown.

MERLUCCIUS VULGARIS. The Hake.

This fish is supplied with a formidable array of teeth along the jaws, and showing externally; it is likewise furnished with a liberal supply in the buccal cavity. The gill-rakers of the first cerato-branchial are short, stout, and horny, and carry teeth; there were seven on the left side and eight on the right in the specimen examined. The longest of them, the second of the series, is about two-thirds of the gill length immediately under it. Along the hypobranchial of the first arch the gill-rakers are turned into a number of flat plates bearing minute teeth, very close together, but not touching; thirteen of these were counted. Two gill-rakers, horny and toothed, grow on the first epibranchial, and above them two flat tubercles, also toothed. The inner edge of the first arch has upstanding gill-rakers studded with teeth. The inner and outer edges of the second and third arches and the outer side of the fourth arch have lumpy tubercles in the centre part, and up to the angle beyond that they merge into flat tubercles; all are tooth-bearing. The upper pharyngeal teeth consist of a patch of very fine cardiform teeth on the second epibranchial, with two patches of strongly built cardiform teeth on the third and fourth epibranchials. The difference of size and strength in the first and second and third of these patches is in strong contrast. The lower pharyngeal teeth are on two plates placed well forward in the gullet, and carry well-defined cardiform teeth with the usual very distinct rows on the inner margins of the plates. The ends of the plates nearer the œsophagus form two white flat surfaces devoid of teeth. The tubercles above mentioned and the pharyngeal teeth are white, and make a marked contrast to the black lining membrane of the buccal cavity.

BROSMIUS BROSME. The Torsk. Fig. 1 (p. 135).

The outer margin of the first arch has nine flat tubercle gill-rakers on the cerato-hypobranchials, and only two very small ones on the epibranchial; the inner margin has seven smaller tubercle gill-rakers. All the above carry minute cardiform teeth which curve inwards. The inner and outer upper surfaces of the second, third, and the outer side of the fourth arch bear tubercle gill-rakers, and these all carry teeth similar to those of

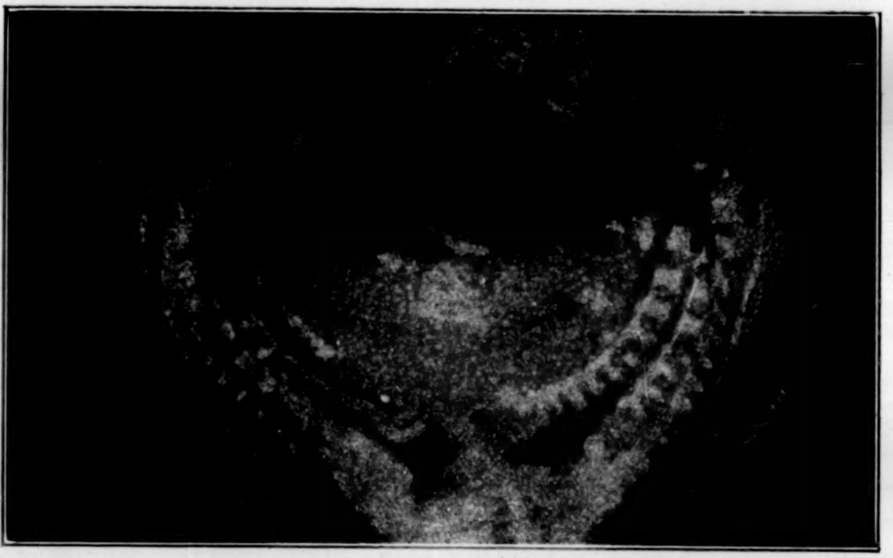


Fig. 1.—Brosmius brosme. The Torsk.

Fig. 2.—Molva elongata.
Fig. 3.—Phycis mediterraneus.
Fig. 4.—Onus communis.
Fig. 5.—Gadus poutassou.

the first arch. The upper pharyngeal teeth show as two patches. The second epibranchial terminates at its upper extremity behind a narrow bone carrying a patch of cardiform pharyngeal teeth; the third and fourth epibranchials similarly join on to a broadly oval-shaped pharyngeal bone that is covered with cardiform teeth, those on its lower portion being stronger, and with a more decided backward curve than those in the upper portion. The lower pharyngeal teeth are in two obtuse-angled triangular patches, studded, but not very thickly so, with cardiform teeth with the points directed backwards, the triangles lying across the mouth transversely, with a broad mucous division between them. The curve of the upper and lower pharyngeal teeth permits of the smooth passage of articles of food towards the œsophagus, but immediately checks any attempted retrograde movement, as can be tested by passing the finger along in either direction.

MOLVA ELONGATA. Fig. 2 (p. 135).

This fish, of the same family as *Molva vulgaris*, also called the Ling, has ten flat teeth bearing tubercles as gill-rakers on the cerato-hypobranchial of the first arch, with two on the epibranchial—these on its outer aspect; the inner aspect has a few very flat ones. On the second arch along the cerato-branchial the tubercles are confluent on the outer side; the hypobranchial is bare of tubercles. The third cerato-branchial has a few flat tubercles along its surface, both inside and outside. The fourth arch has a roughened skin along it. The upper pharyngeal teeth show as two segments studded with cardiform teeth. The upper one is attached to the second epibranchial, the lower to the third and fourth. The lower pharyngeal teeth are in two long triangular patches, the teeth on the marginal portions next the œsophagus being larger than the rest. The triangles are set with their length in the direction of the length of the mouth, and are distinctly separated by a mucous membrane division.

PHYCIS MEDITERRANEUS. Fig. 3 (p. 135).

A relative of *Phycis blennoides*, the Greater Forkbeard (Couch), found on the English coast. The Mediterranean species has eleven horny upstanding gill-rakers in the cerato-hypobranchial of the first arch, which diminish in size till the last ones are very minute; they carry teeth on their inner margins. On the inner face of the first branchial arch there are tubercles, as also on the inner and outer faces of the second and third arches, and on the outer face of the fourth arch. The upper pharyngeal teeth show as two patches, the upper a small narrow patch with small cardiform teeth, the lower of the two as a circular patch with cardiform teeth specially strong at the lower portion of the patch. The lower pharyngeal teeth are in two triangular shaped patches, with a row of strong cardiform teeth along the margins on each side at the middle of the mouth, the other teeth being smaller. A narrow division runs up between the two patches of teeth.

ONUS COMMUNIS. Fig. 4 (p. 135).

This fish has seven tubercular gill-rakers on the first arch cerato-hypobranchials; these carry teeth. The inside of the first arch and the other arches have tubercles on them which are toothed. The upper pharyngeal teeth, which are cardiform, are in two patches, with a third small narrow piece on the inner edge of the third epibranchial, which has villiform teeth. The lower pharyngeals in two patches have minute cardiform teeth, which are more prominent along the middle portion of the mouth. The two patches meet across the middle of the mouth at the anterior ends.

ONUS TRICIRRATUS. The Three-bearded Rockling.

The upper and lower pharyngeals are as in the last mentioned, the junction of the two portions being more complete in this fish. The food of the Rocklings is mostly composed of crustaceans; they also eat annelids, starfish, and other smaller fishes than themselves.

GADUS POUTASSOU. Fig. 5 (p. 135).

This fish has twenty-three horny upstanding gill-rakers from the angle of the branchial arch to the end of the first hypobranchial arch, the one at the angle being the longest, and its length nearly one-fourth of the length from its base to the end of the hypobranchial of the same arch; these gill-rakers diminish in size fairly evenly till the last minute one is reached; there are six on the epibranchial. The inside of the first, both sides of the second and third, and the outside of the fourth arch all carry small upstanding tubercles, which are toothed. When the arches are closed together the tubercles butt one against the other, and so do not form such a perfect filter as they would if they fitted alternately. The upper pharyngeal teeth show as three patches, and have strongly cardiform teeth in the lower portion. The lower pharyngeal teeth are in two triangular portions, with strong cardiform teeth along the middle portions of the triangles. The lining membrane of the mouth of this fish and its tongue are black.

Uraleptus maraldii.

This fish has minute cardiform teeth for the lower pharyngeals, with a stouter row towards the middle of the mouth, as recorded for the fish last mentioned. The upper pharyngeals have stout cardiform teeth at the lower portion.

CARANGIDÆ.

Lichia amia. Fig. 1 (p. 139).

Along the cerato-branchial of the first arch there are, counting the one at the angle, seven hard bony gill-rakers, the inner sides of which are lined with villiform teeth; they decrease in size as they get more forward in the mouth; beyond the gill-rakers are two horny patches, hardly protruding above the level surface of the arch, covered with villiform teeth. There is one similar gill-raker on the epibranchial; this also has four horny patches covered with villiform teeth. On the outside of the angle formed by the cerato- and epi-branchials there are granular asperities. The outer and inner sides of the second cerato-branchial has a skin covered with fine villiform teeth. The outer side of the third cerato-branchial has the same kind of skin, but on the inner side it grows into flat tubercles, also covered with villiform teeth. The epibranchial of the second arch finishes up with an irregular shaped patch of villiform teeth, much longer than its breadth; this is the topmost one of the upper pharyngeal teeth. It shows clearly in the illustration. There are patches of skin with villiform teeth coming down along the epibranchial, stronger in its upper part, and diminishing in size as they approach the angle. These also can be seen in the illustration

CARANGIDÆ.

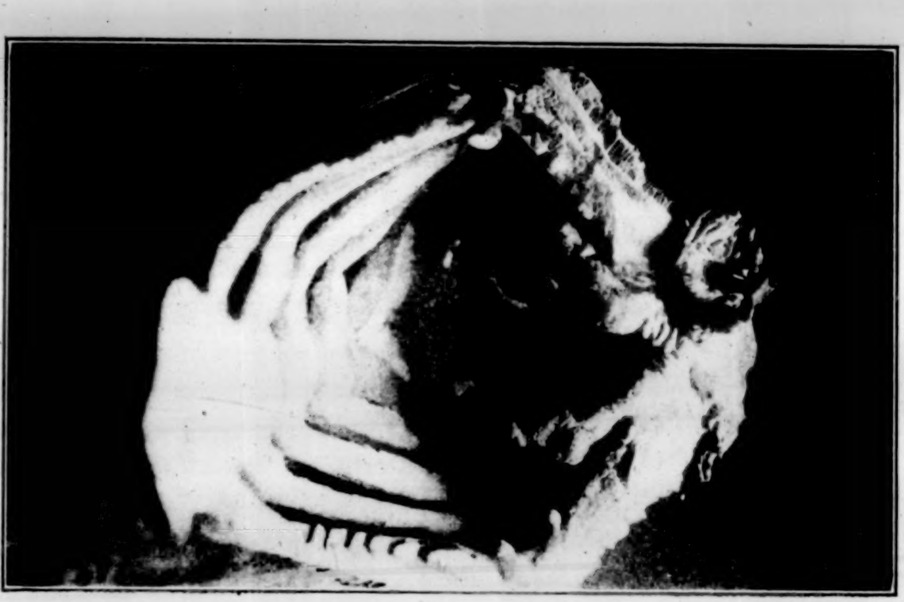


Fig. 1.—Lichia amia.

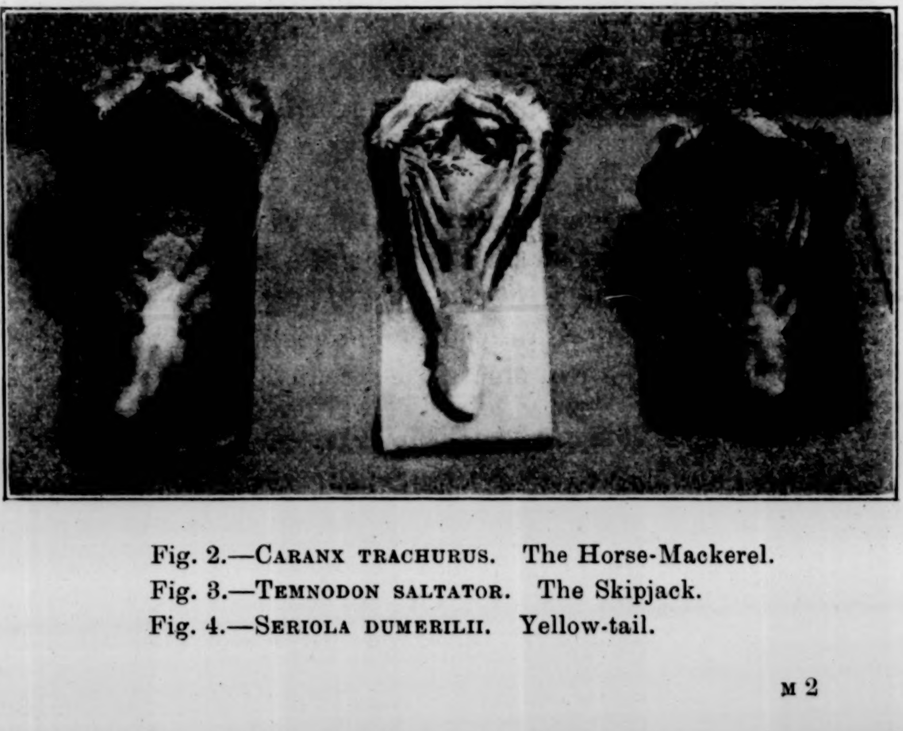


Fig. 2.—Caranx trachurus. The Horse-Mackerel.
Fig. 3.—Temnodon saltator. The Skipjack.
Fig. 4.—Seriola dumerilii. Yellow-tail.

on the left side of the gullet. The rest of the upper pharyngeal teeth are two patches on the ends of the third and fourth epibranchials, one a triangular patch with rounded angles; the second and lower one of these two is roughly ovoid in shape. The lower pharyngeal bones carry two elongated patches of villiform teeth. The proportion of the length to the breadth of these patches is nearly 3¾ to 1.

CARANX TRACHURUS. The Horse-Mackerel. Fig. 2 (p. 139).

The first branchial arch carries a number of fine horny gill-rakers, the one at the angle being the longest, and its length is contained about three times in the length from the angle to the junction of the hypo- with the basi-branchials. There are forty-five of these gill-rakers along the cerato- and hypobranchials of the first arch, and sixteen on the epibranchial. They are smooth to the touch at their tips, but a little rough near the base. The inner side of the first, both sides of the second and third, and the outer aspect of the fourth arches carry short gill-rakers that fit into each other alternately and form a fairly close filtering process. They are covered with a rough surface, palpable on drawing the tip of the finger from the back forwards. The upper pharyngeal teeth show as two separate patches, with a number of small, sharp, cardiform teeth embedded in mucous membrane, each tooth fairly distinct from its neighbour. The ends of these teeth have a downward curve, and are very palpable if the finger is brought the reverse way to which food would pass in swallowing. The lower pharyngeal teeth are on two long narrow patches of an elongated triangular shape, with villiform teeth at the anterior part, but more cardiform in the posterior part; they are embedded in mucous membrane, with the points projecting. The food of this fish consists largely of small crustaceans.

TEMNODON SALTATOR. The Skipjack. Fig. 3 (p. 139).

This fish has but few horny gill-rakers on the outer side of the first branchial arch. The one at the angle is the longest, and is contained about five times in the distance from the angle to the basi-branchial. Counting the one at the angle, there are nine gill-rakers along the cerato-branchial, the hypo-branchial of the first arch is devoid of gill-rakers, and there are only two on the epibranchial. These gill-rakers are smooth to the touch. The other arches are wanting in gill-rakers. The upper pharyngeal teeth show as four distinct patches—one long narrow one at the summit of the second epibranchial, a larger one at the end of the third epibranchial, with a smaller patch along the same towards the angle, and a fourth attached to the fourth epibranchial. The lower pharyngeals are two long narrow patches. From the forward end of these along the basi-branchials there are a pair of patches of villiform teeth between the junctions of the basi-branchials with the second and third hypobranchials, the patches meeting close together in the median line. Another pair of patches, forward of the last two, starting from the junction of the second hypo- with the basi-branchial, are carried along to the junction of the hypo-hyal with the *os glossa.* These have a smooth portion in the middle line; they are covered with villiform teeth.

SERIOLA DUMERILII. Yellow-tail. Fig. 4 (p. 139).

This fish has twelve horny gill-rakers along the outside of the first cerato-hypobranchials; the longest one at the angle is contained some five times in the length of these two bones. There are three on the epibranchial. These gill-rakers have minute teeth on them. The inner side of the first arch has conspicuous tubercle gill-rakers on it, and there are very small inconspicuous ones on the inner sides of the second and third arches, with none at all on the outer sides. The surface of the skin of the arches is covered with a roughness that can be felt by the finger if passed over it in the direction against the swallow. The upper pharyngeal teeth show as three patches of teeth: sharp little teeth if the finger is drawn against them, smooth if the finger is passed in the direction of the swallow. The lower pharyngeals carry two long narrow patches of teeth; minute villiform teeth are found along the upper surface of the basibranchials, and continue to the tip of the tongue.

NAUCRATES DUCTOR. The Pilot-fish.

The upper pharyngeal teeth are cardiform but minute, and so are the lower pharyngeal teeth.

THE DISTRIBUTION OF BRITISH ANNELIDS.

By the Rev. Hilderic Friend.

By Annelids, as understood in the series of notes which follows, we mean those earthworms and fresh-water worms which are usually known as Oligochæts, or worms with few bristles, to distinguish them from the Polychæts, which are usually marine worms. As I am preparing a Monograph of British Earth and Water Worms for the Ray Society, it seems desirable that we should take a survey of our present state of knowledge on the subject. As such a survey will require a considerable space, it is thought best to begin with the larger forms, which have been more fully studied than the aquatic annelids, and the whiteworms or Enchytræids. In the present paper I must be content to supply a list of those species of earthworms which are now known to occur in various parts of the British Isles. When Darwin published his work on 'Vegetable Mould,' it was assumed that about ten species were indigenous. By steady work during the past twenty years I have been able to quadruple that number, so that to-day we have a total of something like forty species, subspecies, or well-marked varieties.

As earthworms are most readily distinguished by the position of the girdle, I supply the numbers of the segments occupied thereby, counting from the head, and reckoning the peristomium (which has no setæ) as the first segment. As nearly all earthworms have special pores, tubercula, or bands on the under surface of the girdle, I give these also. When they extend over consecutive segments, as in all the known species of *Lumbricus*, the band is distinguished by the numbers joined with a hyphen. When, as in *Aporrectodea*, there is not a band, but pores on alternate segments, a colon is used. Thus $\frac{28 - 33}{29 - 32}$ indicates that the girdle begins on the 28th, and extends to the 33rd segment, while the tubercula form a band on the four innermost of the girdle segments. On the other hand, the symbol $\frac{29-37}{31:33:35}$ would show that, while the girdle occupied the 29th to the 37th segments, the tubercula do not form a continuous band, but consist of pores on alternate segments.

Our earthworms were formerly arranged under three genera: *Lumbricus*, *Allolobophora*, and *Allurus*. When the internal structure came to be studied, however, it was found that the large genus *Allolobophora* included such a heterogeneous assemblage that further division was necessary. I shall be content with the briefest possible notes on these matters, as these papers are not intended for a systematic study of worms, but as a guide to the knowledge of their distribution.

I. LUMBRICUS.

Beginning with the oldest, best known, and most widely distributed group, we find that there are five true species of *Lumbricus* at present known in the British Isles. Judging from certain facts we ought to find three other species, but so far, if they exist, they have eluded our search. This group is known by the colour, which is more or less purple and iridescent, but, as this character is also found among the *Dendrobænas*, it is well to notice the fact that the head is inserted into the first segment (or peristomium) by means of a backward growth which extends to the intersegmental groove. In other words, the prostomium entirely divides the peristomium, while the setæ are always strictly paired. The male pores are on the 15th segment, with or without papillæ, the tail is usually flattened, and the girdle covers six segments (except in *L. papillosus*), while the tubercula form a band on the innermost four.

1. *Lumbricus terrestris*, L. $\frac{32-37}{33-36}$ The Common Earthworm.

2. *L. rubellus*, Hoff. $\frac{29-32}{28-31}$ The Redworm, smaller than the last.

3. *L. festivus*, Sav. (= *L. rubescens*, Friend). $\frac{34-39}{35-38}$ Almost exactly like the last, but with papillæ on segment 15.

4. *L. papillosus*, Friend (= *L. friendi*, Cognetti). $\frac{33-37\ (38)}{34-37}$ Closely resembles No. 1.

5. *L. castaneus*, Sav. (=*L. purpureus*, Eisen, &c.). $\frac{28-33}{29-32}$ The smallest of all the true *Lumbrici*; often difficult to distinguish from such worms as *Dendrobæna mammalis* and its allies.

II. ALLOLOBOPHORA.

Colour variable, girdle and tubercula extending over a variable number of segments. Best known by the study of the head. The prostomium does not cut entirely through the first segment. The internal characters differ from those of *Lumbricus*.

6. *Allolobophora longa*, Ude. $\frac{28-35}{32-34}$ The Longworm; often confused with *L. terrestris*. The specific name *longa* is preferred to *terrestris* as being less confusing.

7. *A. trapezoides*, Dugès. $\frac{27-34}{31-33}$ Very similar to the next, both of which are sometimes included under the name *A. caliginosa*, Savigny.

8. *A. turgida*, Eisen. $\frac{28-34}{31:33}$

III. APORRECTODEA.

In this genus the tubercula are on alternate segments, and so it is linked on to the last genus by means of No. 8, which closely resembles the next.

9. *Aporrectodea georgii*, Mich. $\frac{29-35}{31:33}$

10. *A. chlorotica*, Savigny. $\frac{29-37}{31:33:35}$ The best known worm of the class, sluggish, dirty green, but very variable in colour.

11. *A. cambrica*, Friend. $\frac{29-37}{31:33:35}$ Related to No. 10 as No. 9 is to No. 8.

12. *A. similis*, Friend. $\frac{28-35}{30:32:34}$

IV. EISENIA.

Not easy to distinguish from the foregoing except by the study of internal characters.

13. *Eisenia fœtida*, Sav. $\frac{26-32}{28-30}$ The well-known Brandling, with red and yellow bands, found in manure-heaps.

14. *E. veneta*, Rosa (= *E. hibernica*, Friend). $\frac{27-33}{30-31}$ Perhaps the most variable worm we have. Half a dozen well-marked varieties have been named by myself and others.

15. *E. rosea*, Sav. $\frac{25-32}{29-31}$ (=*A. mucosa*, Eisen). One or two well-marked varieties occur.

V. Dendrobæna.

An interesting group of worms, some of which are regularly found in rotten tree-stumps. They are usually a ruddy brown or purplish colour, similar to *Lumbricus castaneus*, but the head does not entirely bisect the first segment, and the setæ are wider apart.

16. *Dendrobæna mammalis*, Savigny (*D. celtica*, Rosa). $\frac{30-36}{33-34}$

17. *D. submontana*, Vejdovsky. $\frac{25-32}{28-30}$

18. *D. subrubicunda*, Eisen. $\frac{26-32}{28-30}$ Most frequently found with the Brandling.

19. *D. arborea*, Eisen. $\frac{26-32}{29-30}$ This is the true Tree-worm.

20. *D. octœdra*, Sav. (= *D. bœckii*, Eisen). $\frac{29-33}{31-33}$

21. *D. alpina*, Rosa. $\frac{28-33}{30-32}$

VI. Bimastus.

The worms of this genus are best known by the absence of tubercula on the girdle-segments, and the absence of spermathecæ.

22. *Bimastus eiseni*, Levinsen. Girdle-segments 25 – 32. Head like that of *Lumbricus castaneus*.

23. *B. constricta*, Rosa. Girdle, 26 – 31.

24. *B. beddardi*, Mich. Girdle (24). 25 – 31.

VII. Octolasium.

Rather large worms, similar to *Allolobophora*, but with the setæ in eight rows, and girdles resembling *Lumbricus*.

25. *Octolasium cyaneum*, Sav. (= *A. studiosa*, Rosa). $\frac{29-34}{30-33}$

26. *O. lacteum*, Oerley (= *A. profuga*, Rosa). $\frac{30-35}{31-34}$

27. *O. rubidum*, Oerley. $\frac{30-35}{30-35}$

28. *O. intermedium*, Friend. $\frac{28-35}{31-34}$

29. *O. gracile*, Oerley. $\frac{30-35}{30-35}$ Closely resembles No. 27, but seems to me to be a distinct species.

VIII. Eophila.

No definite external characters to distinguish it from some of the foregoing genera. I include here one species only, so far as Britain is concerned.

30. *Eophila icterica*, Savigny. $\frac{33-42}{35-41}$ It will be seen that the girdle and tubercula cover a larger number of segments than usual.

IX. Helodrilus.

Worms which live in mud, and are at present little known.

31. *Helodrilus oculatus*, Hoff. So far it has never been found with a girdle, unless Michaelsen is correct in associating it with the next, which I am at present unable to do.

32. *H. hermanni*, Michaelsen. $\frac{22-32}{29-30}$ I place here also for the present

33. *H. elongatus*, Friend. Girdle extending from segment 15–24. It may prove to be a *Sparganophilus* or a near ally.

34. *H. relictus*, Southern. $\frac{50-59}{51-58}$

The whole of the worms placed here under *Helodrilus* and found in Great Britain are of peculiar interest, but need a great deal of further investigation.

X. Allurus.

The male pores are usually on segment 13, but may occur on the 12th or 15th. They are small worms found in mud, and have a square tail. Michaelsen has changed the name to *Eiseniella*.

35. *Allurus tetrædrus*, Savigny. $\frac{22-26}{23-26}$ A well-marked golden variety (*luteus*, Friend) is found, as well as the type.

36. *A. tetragonurus*, Friend. $\frac{18-22}{19-21}$

37. *A. macrurus*, Friend. $\frac{15-22}{20-21}$

38. *A. hercynius*, Mich. $\frac{23-27}{23-25}$ Male pores on segment 15.

Although this list still needs revision, it is the most complete available at the present time. Some of the species are still hardly known, and others are hard to define. We shall make it the basis on which to found the notes which are to follow on the distribution of Annelids as at present known in these islands.

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

Variety of the Badger. — Mr. Newstead's Badger, recently described (*ante*, p. 111), is not an uncommon erythristic variety of this animal, tending to albinism. I sent a description of a female of this variety, dug out of its "earth" near Longton, Staffordshire, to 'The Field' of August 19th, 1905. This animal is now in the London Zoological Gardens, with a male of the same variety from Oakham, Rutland. There is also a specimen in the Cromwell Road Museum; another is described in 'The Zoologist' for 1880, p. 252; another was in the Zoological Gardens in 1890; and another was reported from Oxfordshire by Mr. Aplin in 'The Zoologist' for September, 1907, p. 331. This animal seldom breeds in captivity, but it is possible that if the two animals in the London "Zoo" were provided with a more naturally formed "earth," instead of the present cage in which they were placed when I last saw them, success might result. —John R. B. Masefield (Rosehill, Cheadle, Staffordshire).

AVES.

Range of the Twite.—Mr. O. V. Aplin, in his notes on the Linnet (*ante*, p. 112), refers to the range of the Twite, and it may be of interest to state that the northern parts of the county of Staffordshire appear to be about the southern limit of its breeding range. As to the Twite in winter in this county, I cannot do better than quote from a letter recently written to me by Mr. B. Bryan, of Longton, who is a most accurate observer of wild bird-life. He says:—"I have met with the Twite singly and in small flocks. It usually occurs in company with the Linnet and Lesser Redpoll. Sometimes all three species associate. The Twite is often caught on the limed twigs and bents of grass used by birdcatchers, which are placed in the vicinity of a 'call-bird.' The Twite is not in much demand as a cage-bird locally, and consequently the birdcatchers, when they find Twites entangled in their bird-lime, often kill the birds rather than take the trouble to clean the bird-lime off the flight-feathers and release the birds. I once kept a Twite in captivity for about a fortnight, but the bird was so wild that I released it. Last year I saw one in Longton that had been in a cage for about two years; it behaved much as the Linnet, and was continually uttering its call-note. The local name for the Twite is 'Dummock,' and any local birdcatcher knows that the Twite is meant by this name. I think the fact that this bird has obtained a local name goes far to show that this species is fairly common in winter with us." I may add that this local name "Dummock" must not be confused with "Dunnock," a local name for the Hedge-Sparrow, but by which this bird is seldom if ever known in Staffordshire.—JOHN R. B. MASEFIELD (Rosehill, Cheadle, Staffordshire).

The Colour of the Kingfisher. — A perusal of the interesting article in December 'Zoologist' on the above subject (1910, p. 462) brings to my recollection an incident of many years ago. An artist, who in the summer spent much of his time sketching in this neighbourhood, on one occasion painted a large picture of a portion of the meadows, in which the winding river, with its sedges, alders, and willows, was a somewhat conspicuous feature; he thought the introduction of a flying Kingfisher would be a great improvement, if not an absolute necessity, as he had seen almost daily one or more of those winged jewels, and asked if amongst my few birds I had an uncased specimen to lend. I happened to have all his desire. The picture for the most part was painted in the meadows, but certain details—the figure of the Kingfisher amongst the number—were done in a large billiard-room where much of the light was obtained from the glass roof. On the return of my bird I was invited to see the finished canvas, and at once saw the well-outlined Kingfisher was incorrectly coloured. The gentleman was somewhat amazed at my criticism, and, having again brought the bird for comparison, he discovered that altering its position, say, from right to left, or *vice versa*, the colour of the back changed, and he afterwards told me that if the bird remained in the same position *in the room*, the colour of the back was not the same in the afternoon as it was in the morning, doubtless accounted for by the different position of the main source of daylight, but of this latter peculiarity I had no personal experience.—G. B. CORBIN (Ringwood, Hants).

Period of Incubation of the Sparrow-Hawk.—Referring to Mr. Jourdain's note on Mr. Selous's article on the domestic habits of the Sparrow-Hawk, it occurred to me also, on reading the passage (*ante*, p. 53), that Mr. Selous was quite unnecessarily suspecting the boy of having robbed the birds of their first clutch of eggs. It so happens that many years ago (in 1887) I watched a Sparrow-Hawk's nest to ascertain the period of incubation, and, referring to my notes, I see the eggs took exactly five weeks to hatch. I remember being very much surprised at the time at finding the period of incubation so protracted, but some years ago I noticed in a paper or magazine that another observer had timed the Sparrow-Hawk to take five weeks to hatch its eggs.—E. W. H. BLAGG (Cheadle, Staffordshire).

Domestic Habits of the Sparrow-Hawk.—Whilst reading the very interesting notes on the nesting habits of the Sparrow-Hawk by Mr. Selous, it struck me that perhaps after all the boy (*ante*, p. 53) had not taken the eggs from the nest about the middle of May, as surmised by Mr. Selous. It is a popular belief with gamekeepers—at least in this neighbourhood—that the period of incubation of this species lasts six weeks, and some are very obstinate on this point; but I believe, however, that five weeks will be found much nearer the incubatory period, even its maximum period. I quite agree with Mr. Jourdain (*ante*, p. 113) that a Sparrow-Hawk commencing to set about the middle of May could not bring off its young and commence laying a second time much, if any, before the end of July. Whatever may be the habits of the Sparrow-Hawk elsewhere, it can be safely said that it is single-brooded here, and that the duty of incubation is confined to the female; also, that the male bird usually plucks his bird-victims before he transfers them to the safe custody of his mate. Much diversity exists, even among excellent ornithologists, as to whether this species usually or always builds its own nest, and I believe Professor Newton's statement that the Sparrow-Hawk always builds its own nest is much too absolute. — E. P. BUTTERFIELD (Wilsden, Bradford).

Breeding of the Honey-Buzzard in England.—Besides the counties mentioned by Mr. Aplin (*ante*, p. 113) there is fairly conclusive evidence that the Honey-Buzzard has bred on one occasion in West Staffordshire, close to the Shropshire boundary, in 1841 (*cf.* 'Zoologist' for 1856, p. 5096). The date of publication of Pennant's 'British Zoology' renders it impossible for him to have referred to this occurrence, but it is quite likely that the bird figured by him was from the same district, and not from Shropshire. The same volume of 'The Zoologist' contains (p. 5058) a record of a nest "on the borders of Hampshire and Wiltshire" in 1852, and references to other instances of breeding in the British Isles. The latest record of nesting in England appears to be from Herefordshire in 1895. "Mr. A. G. More ('Ibis,' 1865, p. 13) mentions nesting at Burnham Beeches, Berks (Charlesworth's 'Mag. of Nat. Hist.' i. p. 539), and Shropshire, on the authority of Mr. H. Shaw. He also adds that Mr. Heysham was informed that it bred in the woods at Lowther, Cumberland, but there seems to be no satisfactory evidence in this case." — F. C. R. JOURDAIN (Clifton Vicarage, Ashburne, Derbyshire).

Decrease of Corn-Crake, Wryneck, and Nuthatch. — The Corn-Crake has undoubtedly decreased in this district. Twenty years ago their harsh note was one of the characteristic sounds of the Thames Valley, now it is seldom heard. The decrease may be attributed to several different causes, first and foremost the fact that our meadows are now wetter than of old; either they have sunk (which is unlikely), or the head of water is kept at a higher level. Whatever the cause, it is a fact that, whereas the Corn-Crake was formerly a common breeder, it is now almost extinct, and that the Snipe, which seldom, if ever, nested with us, now breeds regularly. The Wryneck was never common in these parts, but about six years ago the numbers seemed to increase, and we had two or three nests in our boxes. During the last three seasons we have seen a few individuals on first arrival, though none remained to breed. Nuthatches, on the other hand, have very materially *increased*. When I was a boy they were uncommon, now distinctly numerous. Last season we had five nests in our boxes, and I knew of as many more in trees. This local increase is all the more remarkable, having regard to Mr. Aplin's note, as he resides certainly not more than forty miles from this property, "as the crow flies."—HEATLEY NOBLE (Temple Combe, Berks).

THAT all three of the birds named have much decreased in numbers in this part of Hants is a well recognized fact—the Corn-Crake in the meadows or the corn-fields, and the Wryneck in copse, orchard, or garden, both better known by their voice than their appearance; and how welcome those spring notes of "crake, crake" and "weet, weet" to a lover of nature, speaking of sunshine and hope! Last summer a single Corn-Crake was heard in this locality, where years ago it was comparatively common. A friend (now deceased), formerly living in Ireland (Westmeath), informed me of its gradual decrease from year to year; at one time it was so common near the house as to disturb the night's sleep, but it became so scarce that its voice was seldom heard. How often of old the Wryneck was heard by those to whom the bird was invisible in its beautiful shadings of lichen-grey and brown, as it perched upon the tree-trunk close at hand! Many summers have passed since I last had the pleasure of hearing it; the woods and orchards are the same, but the birds are absent. It is true we have had unfavourable summers following each other; the mowing-machine (in the case of the Corn-Crake), telegraph- and telephone-wires, the builder's bricks and mortar, and in some cases unceasing persecution may be held responsible for the apparent decrease, but it seems as if other potent causes must be working destruction with many other species—the Swallow tribe, the Sky-Lark, the Linnet, and others; and the same law applies to fish and insects (Lepidoptera), as the angler and entomologist can testify. Let us hope that with more congenial summers an improvement in bird-life may be noted. As regards the Nuthatch, I do not think it is so scarce as newspaper and other reports assume it to be. Evidently it is not so common as it once was here, but I am told by those who provide a bird-table—and it is gratifying to know their number is increasing—that the Nuthatch is still much in evidence at times. With the uninitiated I believe it is sometimes overlooked, as it moves hither and thither, mouse-like, upon the branches, or ascending and descending the tree-trunk, unlike its companion, the Tree-Creeper, which seems unable to descend, and drops to a lower level to continue the examination. When I was able to ramble amongst the feathered tribes the Nuthatch was one of my many favourites amongst the small birds. Its comparatively large head and feet, its labour in contracting the Woodpecker's hole for its own requirements, its Tit-like attitudes and activity, its soft amorous whistle at nesting-time, are but a few points in the character of this shy but fearless species. I recollect once watching quite a battle near a nesting-hole in an old tree between one of these birds and a Great Tit. Everyone knows what an impudent and often courageous bird the latter is, but all his "pluck" and bluster were of no avail against the larger and stronger bill of the Nuthatch. It seems somewhat strange that the Nuthatch is seldom, if ever, found in the Isle of Wight.—G. B. CORBIN (Ringwood, Hants).

Decrease of the Corn-Crake.—If the Corn-Crake is becoming scarcer in some parts of England, it is a sad thought, but I can assure readers of 'The Zoologist' that most certainly such is not the case in the neighbourhood of Scarborough, where (to use the words of Mr. Steele Elliott in referring to its status in Staffordshire thirty years ago) "a pair at least of Corn-Crakes may be found nesting in almost every large meadow," even within the borough boundaries. This bird is always so common here that when visiting some other parts of England in the summer months I have been surprised to notice the absence of its voice. Thus, when on a visit to the Norfolk Broad district, where I spent a week in May, 1901, thinking of and looking for nothing but birds, I neither saw nor heard it. On our north-east coast, where the hay and corn harvests are much later than elsewhere in England, the bird's nest and eggs are less likely to be destroyed by the reaping-machine, and this may account for its continued abundance.—W. GYNGELL (Scarborough).

THE observations in your recent issues prompt me to say that during the last seven years (1904 and onwards), in the course of many outings in Middlesex, Herts, and Bucks, I have only twice heard this bird, *viz.* near Great Missenden on June 5th, 1910. This experience is so greatly at variance with local ornithological writings that I cannot suppose it to indicate the actual prevalence of the species, but it may serve as a comment on the notes of your correspondents. Of earlier years in the above-named districts I can say nothing, but in the West of Scotland there was no more familiar sound in the fields, all over, than the calls of the Corn-Crake.—HUGH BOYD WATT (3, Willow Mansions, West Hampstead).

I notice that in the list of birds in the new edition of Mr. W. M. Webb's 'Brent Valley Bird Sanctuary' (Selborne Society, 1911), the Corn-Crake does not occur. The locality has now been carefully and continuously watched since 1905. Wryneck and Nuthatch: In the Sanctuary the Wryneck nested in 1910 (unsuccessfully), and the Nuthatch reared young in 1909 and 1910.—H. B. W.

Notes from South-Western Hants.—The damp and uncertain weather of last summer, followed by a no less damp and mild winter, seem to have upset the usual routine of bird-life, especially with the migrants visiting this particular locality. The two species of Martin, as well as the Swallow, were neither of them so common as formerly, although Swifts and Nightjars were in their usual numbers. The Nightingale was much more frequent than in the spring of 1909, but of the other warblers fewer were seen or heard, and in one or two localities where the Red-backed Shrike annually nested none were seen. In the winter, too, there appeared to be a comparative scarcity of both Fieldfares and Redwings; I heard of only one Bittern, and the northern breeding ducks were many of them altogether absent, or but scantily represented. The river being in flood most of the winter the usual "shoots" from "gazes" were comparatively few, but when circumstances permitted plenty of the commoner kinds of wildfowl were found for the guns; on one occasion nearly five hundred head were killed, including a large number of Mallard, over one hundred Teal, one hundred and sixty-eight Coot, and many Wigeon; of the latter species a very large flock was seen upon the water, and good sport was anticipated, but on the first shot the whole community soared to a great height and made towards the sea, with their numbers somewhat thinned. Two or three immature Pintails and Shovelers—the latter no doubt bred in the locality—were met with, and one old well-marked Goosander was seen, as well as two or three "skeins" of Wild Geese—from five to fifteen—but none were killed. A very rare and interesting sight, for this neighbourhood, took place soon after the shooting began; upwards of forty Herons were on the wing at the same time, and an old sportsman, of long experience, told me he had never previously seen such a sight; it speaks well for the favour and preservation accorded to those much-persecuted but grand old fishers.

In August I saw an immature and rather prettily marked male of the Montagu Harrier, killed somewhere, I believe, near Fordingbridge. Its aspect was rather strange, as the "ruff" was well developed on one side of its head, but on the other was almost wanting, which gave the face a peculiar one-sided appearance. It had the remains of a sand-lizard in its stomach, but the body was thin and poorly nourished. About the same time I several times heard that a Honey-Buzzard had been killed in the Valley of the Avon, but I did not see it, neither could I trace its whereabouts, or be certain of its correct identification. The Peregrine Falcon has not put in an appearance so frequently as in previous years. I have the record of one being *seen*, but not molested; indeed, I am glad to say I have not heard of one being killed for a considerable time.

Jay and Wood-Pigeon.—This neighbourhood has been invaded by both species; the first intimation I had of the increase of Jays was at the end of August or beginning of September, when a gamekeeper told me he had shot more within a few days than he had previously seen for twelve months. Eventually the same tale of slaughter came from various quarters, and if I may judge from the number of Jay's wings I have seen in ladies' hats, the birds must have been abundant. I know of one instance where three dozen wings were sent at one time to a lady. Whence does the Jay migrate? as it is by no means the first time the wanderers have come to us, and their visits seem somewhat irregular. The Wood-

Pigeons were and are unusually abundant; last summer in the meadows, before the hay-making, they were in large numbers foraging for the grass seeds, and since that time they have increased, but not in the neighbourhood of the Forest to such an enormous extent as they have in many other localities—as Essex and Isle of Wight. This may be owing to a comparative scarcity of both acorns and beech mast, for last season, I am told, was unfavourable for fruitage of both oak and beech, consequently the birds are taking toll of the farmer's greenstuff—clover, turnip-tops, &c.—and it seems almost incredible the quantity of this kind of food a single Pigeon can pack into its crop—it must be seen to be believed. Characteristically wary and from density of feathering hard to shoot, yet by means of a stuffed decoy very fair "bags" have been made in the open fields if the sportsman could secure enough shelter, but one man told me you have to be quick. The best time to shoot them is after sunset, when, having had their fill, they come to the woods to roost. A farmer told me that one evening he stood at the corner of a wood near a brook and shot thirty Pigeons in little more than half an hour. I have not heard of any disease of throat, beak, or feet amongst our present visitors, as was the case some few seasons ago, when I saw many specimens whose feet were quite deformed with the malady.

Otters.—The annual visit of the Otter hounds to this neighbourhood last season was not very successful, although from time to time I heard of Otters and their workings in different parts of the Valley of the Avon, where the river is too deep and broad for hunting. Situated near a residence is a rather large fish-pond, enclosed with wire-netting to prevent Foxes making too close acquaintance with the several species of "ornamental" ducks that find a home on the water; on two sides is a small wood with undergrowth of bushes. For some time it had been noticed that the fish were decreasing in numbers without any apparent cause; thieves and marauders of all kinds were repudiated, but eventually a burrow was discovered underneath the protecting wire, and a fine dog Otter, weighing 23 lb., was caught—no fish have since been missed. Another dog Otter of 20 lb. was shot by a party who were "cripple-hunting" after a day's shooting, and this fellow was disporting itself in the water, in the noontide sun, in a very lively and frolicsome fashion when it was killed, possibly it had a mate near which was unobserved. In another locality farther down the stream I understand a "holt" was discovered containing two cubs which were taken and are being successfully reared. On March 23rd and 24th, Otters, weighing eleven and ten pounds respectively, were caught at a certain point in the river, possibly both of one litter, male and female; I saw the latter, which was the heavier of the two.

Salmon.—The flooded state of the river last autumn and winter was favourable to the ascent of spawning fish, and this season the "fresh run" examples are rewarding the patient anglers to some extent. I believe Salmon caught in the Avon, although much fewer in number than those taken in the rivers farther north, are, as a rule, heavier fish, and this season, thus far, has been no exception. Several good fish from 20 lb. to 30 lb. were taken, and two of 40 lb. weight yielded to the attraction of the fly; and I was informed of a curious incident happening at the capture of one of the latter, the *blade* of the gaff snapping asunder, but the expert angler played his quarry so long and dexterously that another gaff was secured from a considerable distance off, and the fish eventually brought to bank after much excitement and "language."—G. B. CORBIN (Ringwood, Hants).

ANNELIDA.

Dutrochet's Land Leech.—Two Leeches were found under a box of bulbs which was let six inches deep into the earth in a garden in Penge, rather less than one mile from Selhurst Road, and sent to Mr. W. A. Harding, of Histon Manor, Cambridgeshire, who identified them as *Trocheta subviridis* (Dutrochet, 1817). They were found in the beginning of February (or possibly end of January), 1911, by a gardener, who described them as of a very beautiful green colour, very firm and fat when first found, and one swallowed an earthworm whole.—F. NORGATE (20, Anerley Park, S.E.).

THE Leeches found by your correspondent at Penge are examples of Dutrochet's Land Leech, *Trocheta subviridis* (Dutrochet, 1817). This rare and curious form is met with from time to time, sometimes in considerable numbers; its occurrence, however, is always well worth recording, for we know little of its mode of life, or of the factors which determine its somewhat sporadic appearances. The fact that the first specimen noted in England was taken in Regent's Park (in 1850), and that more than one Leech found in the Zoological Gardens has been attributed, erroneously it has since appeared, to this species, not unnaturally suggested the idea that it had been accidentally introduced into the Zoological Gardens along with some tropical animal. It is, however, not a tropical species; its range as at present known extends no further than Italy, France, and Algeria, and although rare, there is no reason for supposing that it is not indigenous in this country. Dutrochet's Leech is carnivorous, devoid of teeth, harmless to man, and far removed from the typical blood-sucking Land Leeches which are such a pest to the traveller in certain hot countries. The four pairs of eyes appear as a series of minute black spots fringing the anterior extremity. Its food consists of various species of earthworm, which are devoured piecemeal. Although spending much of its time in moist situations on land, it is really an amphibious form, and it appears to issue from its hiding-places for the most part at night in search of its prey. No doubt it has sometimes been overlooked on account of its nocturnal habits and superficial resemblance to an earthworm, and it is probably less uncommon than is generally supposed. It was last recorded in England in 1909, when it was discovered at the Withington Sewage Works, near Manchester, where it was found frequenting the effluent channels, and feeding upon the earthworms washed out of the filter-beds. I kept a number of specimens obtained from this source in an aquarium filled but a few inches deep with water, and having a quantity of moss banked up well above the water line. During the day the Leeches lay quiescent beneath the water, but at night they became active, frequently crawling forth amongst the moss, in which, during the early summer, their flattened, elliptical, horny egg-capsules were deposited. The occurrence of this Leech in England up to the year 1877 formed the subject of an interesting paper by Harting in the pages of this Journal ('Zoologist,' third series, vol. i. (1877), pp. 515–523), and a full description of the species, with its further history, has been given by the present writer in a recent paper on the British Leeches ('Parasitology,' vol. iii., pp. 183–186, plate xv., figs. 46 and 47).—W. A. Harding (Cambridge).

NOTICES OF NEW BOOKS.

Atlas of Zoogeography; a Series of Maps illustrating the Distribution of over Seven Hundred Families, Genera, and Species of Existing Animals. Prepared by J. G. BARTHOLOMEW, LL.D., &c., W. EAGLE CLARKE, F.R.S.E., &c., and PERCY H. GRIMSHAW, F.R.S.E., &c. John Bartholomew & Co.

SINCE Sclater, Murray, and Wallace, the pioneers of our present knowledge of zoogeography, published their memorable volumes, the geographical deliminations of animal life have been much advanced by the increase of faunistic catalogues and the description of genera and species during the series of years that have now elapsed. The somewhat despised describer of species—and he should not be rated too highly—may be rewarded by seeing that he assists in enlarging the boundaries of our knowledge of animal distribution; and the work is still far from being completed.

The divisions employed are the usual Palæarctic, Ethiopian, Oriental, Australian, Neotropical, and Nearctic Regions, and the animals studied comprise Mammalia, Aves, Reptilia and Amphibia, Pisces, Mollusca, and Insecta, the latter confined to Lepidoptera, Coleoptera, Hymenoptera, and, to a less extent, Diptera, Hemiptera (*Coccidæ* only), Neuroptera, Trichoptera, and Orthoptera.

An adequate introduction is given on general principles of distribution, its historical and geographical aspects, a zoological digest, and a very full bibliography indeed, one which will greatly assist any student of the subject. Of the large folio illustrations, which are split up into many smaller maps, the general excellence of Bartholomew's Physical Atlas is maintained, and gratefully we acknowledge a good general index. There can be no doubt about the value of this publication up to date.

It prompts, however, reflections as to the future treatment of the subject in the years to come. To exclude the distribution of *Homo* from that of other animals seems still a process that requires breaking, and one that at present unnecessarily ignores an important section of the Mammalia. Palæontology must afford its full quota of facts; the distribution of extinct animals can never be divorced from zoogeography. And now we come to a more debatable consideration in the question whether the principles of faunistic distribution can ever be completely founded without a study of, and full reference to, the flora and its distribution. A time must arrive, especially as we are even now all considered to be in some sense more or less evolutionists, when volumes described as devoted to the subject of "Natural History" will not deal with zoology alone, omitting *Homo*, and discarding the flora of the planet. Lastly, it is to be premised that in the future the geological floor on which animals are dispersed, and in which plants live, must receive the attention of students of zoogeography.

In relieving our minds from these cogitations we make no complaint against the preparation of this excellent publication, nor have we a right to expect it to deal with subjects before their time. The historian may arrive at some degree of finality, but the scientific philosopher—never. To think otherwise is the negation of the idea of an evolutionary progress in science.

As an item of bibliography, it may be mentioned that Dr. Sclater's paper "On the Distribution of Marine Mammalia," read before the Zoological Society of London in 1897, was by a happy accident first published in 'The Zoologist' of that year (p. 217).

EDITORIAL GLEANINGS.

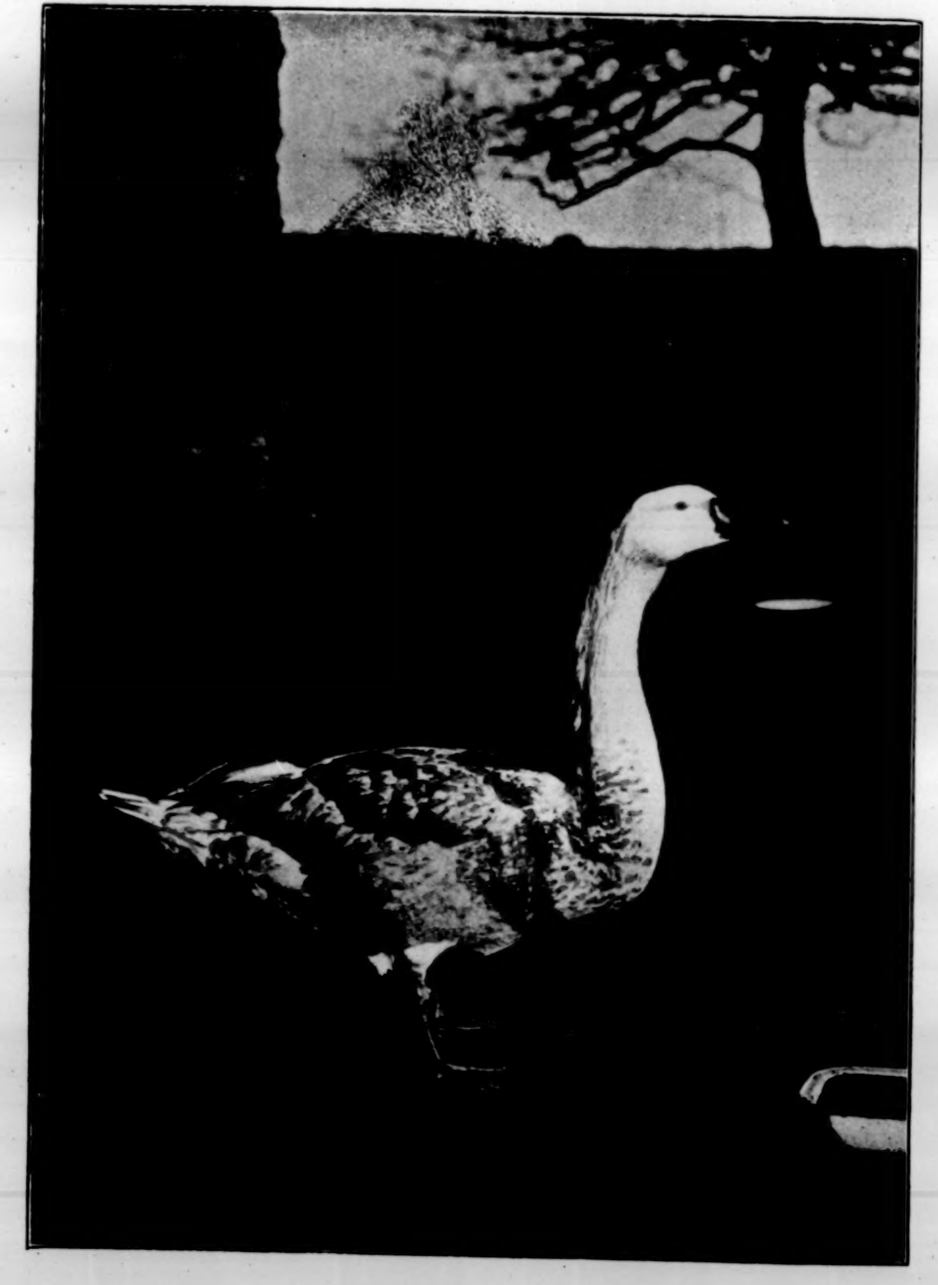
"According to advices from the Caucasus, millions of singing birds, which used every winter to find a warm retreat on the southern slopes of the forest-clad mountains of the Caucasus, have suddenly been surprised by the intense cold and severe snowstorms, whilst they were on their way from the north. The sides of the mighty mountains, the highest in Europe, and the shores of the Black Sea, are now strewn with small corpses of singing birds, especially Bullfinches, Goldfinches, Redbreasts, Flycatchers, and other birds, which in the summer mostly visit these shores."—*Pall Mall Gazette*, Feb. 14th, 1911.

We annex the following extracts from "Gareth's" well-known weekly contribution to the 'Referee' (April 9th, 1911):—

"It is curious how often we find the keenest observers contradicting themselves about the habits of birds and beasts, the explanation being that the bipeds—the feathered ones, I mean—and the quadrupeds often differ so much in their proceedings. As a rule, for instance, the cock Pheasant is the lord of a harem with a number of attendant wives; but a great authority on this subject has stated that, though sometimes several hens with their families put themselves under the protection of one cock, there are other occasions when several cocks act as cavaliers to one hen and her family. She gets horribly conceited; at least, that is what one would be inclined to suppose. The recital of this fact only shows how careful we should be not to contradict each other, and to make assertions that things do not happen because we never chance to have seen them. Talking of the cock Pheasant in April, there is an authenticated instance of Pheasant chicks having been seen in Devon, eleven of them, as early as April 18th. A man might live in the country a great many years, become thoroughly well acquainted with the ways of the inhabitants of the countryside, and never see a Pheasant chick until well on in May. Indeed, the hen Pheasant generally begins to lay her eggs in the month—about the middle—of April, and having laid them it takes her about a month to introduce the fluffy contents to the world. There is an authenticated record of a Pheasant who was sitting on her nest, with twelve eggs in it, as late as Sept. 3rd, and that is the sort of story one would hesitate to believe unless it came from a very trustworthy quarter.

"If you asked the average countryman whether Pheasants nested in trees, having ascertained that you were not suggesting what is called a catch, he would inform you that they never did anything of the sort; that they roosted in trees, but conducted all their little family operations on the floor. This, again, would be wrong, and it is certainly not everyone who knows the rights of this particular case. Pheasants, it is quite true, do not *build* nests in trees; but one will occasionally lay eggs after having taken possession of the nest of some other bird, like a gorgeous Cuckoo. Some years ago I edited a book on the subject of the Pheasant, and that is how I chance to have gathered in out-of-the-way bits of knowledge. One of these bits was to the effect that in the year 1892 a credible witness bore testimony to the discovery of a Pheasant's nest with eleven eggs in it in a spruce fir fully twenty feet from the ground. The first thing one naturally thinks of is what is likely to happen to the chicks when they come into this troublous world; because they do not resemble the offspring of ordinary tree-building birds. The discoverer of this nest went to rob it, with the most kindly and benevolent intentions, his purpose being to put the eggs under a hen, so that when the chicks came out they might walk about in the ordinary course, instead of finding themselves in the air. The hen Pheasant, however, tried to frighten him away by flapping her wings and pecking at his hand. He left five of her eggs to console her, putting the others under the poultry hen, when they were duly hatched out; and going to the tree to ascertain how the others were getting on, he found a lately hatched Pheasant at the bottom of the trunk calling out to his mother far above, while she was anxiously replying. The narrator of this interesting story goes on to state that he proceeded to relieve the other captives and bring them down to safety, the old bird, not having the wit to appreciate his intentions, constantly darting at and pecking him. Finally she chased him out of the wood, he declared, and went back to her young. That eminent authority the late Lord Lilford also published a story of a hen Pheasant who took possession of a Wood-Pigeon's nest, and laid nine eggs in it. Three of the chicks in this case were found dead at the foot of the tree, having broken their poor little necks or otherwise done for themselves in the fall, but the other half-dozen, it was believed, came off all right.

"What has been said about the different habits and dispositions of different birds is proved by another story of a cock Pheasant who sat on nine eggs and duly hatched them out. The cock Pheasant, as a rule, is not in the least commendable in the characters of husband and father. He is a very vain person, very haughty, and very greedy; struts about, does himself well, seeks admiration, and declines to be bothered in any way with family responsibilities. This one, who played at being a hen, was, of course, altogether an exception. Indeed, the hen Pheasant is not a model mother as the hen Partridge is; the hen Pheasant will often desert her nest if she finds anything to amuse her elsewhere, and is so deficient in maternal instinct that she will sometimes leave her unfortunate chicks to take care of themselves. In the valleys of the Caucasus 'unsociable as a Pheasant' is a familiar saying. There is no affability about our brilliant friend. I do not know anything more quaint and interesting about Pheasants than the fact that the hen will sometimes assume the plumage of the cock. How she manages to do it no one has been able to explain; nor, indeed, can one guess at the motives which induce so strange a transformation, but that there are hens who do this any amount of evidence unquestionably proves. For the matter of that, hen Pheasants are not the only hens of like proclivities. Another funny thing about Pheasants is the way in which they used to be sometimes caught in days of yore—very much yore, for the writer who first described the method, so far as is known, was the foster-brother of no less a personage than Richard Cœur de Lion. The would-be capturers—that is a clumsy expression, but one hardly knows whether to call them sportsmen or poachers—used to make a dummy cock Pheasant, coloured as nearly like the real bird as the paints of the period and such artistic skill as they happened to possess allowed. Having ascertained that there were Pheasants in the neighbourhood, the fowlers put out their dummy and took cover. Presently the cock Pheasant would see his supposed rival. The spirit of combat would take possession of him. He would advance to attack the intruder, as he supposed him to be, and while thus engaged would give the fowlers the opportunity of taking him in a net. I must not, however, occupy too much space with disquisitions on this pride of the woods."



SWAN × GOOSE HYBRID.